

REMARKS

Claim 1 stands rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,004,969, which issued to Schanin.

The Examiner is of the opinion that Schanin discloses an AC voltage generator which feeds an AC voltage into a load circuit (column 1, lines 13-15); a load circuit which contains at least one lamp and is designed such that the phase of the current which flows in the load circuit is determined with reference to the applied AC voltage, essentially by at least one component which conducts a current which flows through the filaments (column 1, lines 23-42); and a device for measuring the phase of the current, which flows in the load circuit, with reference to the applied AC voltage wherein the operating device is disconnected as soon as the above-named device for measuring the phase detects a phase angle which violates a prescribed limiting value (column 1, lines 23-42).

Applicant respectfully submits that the Schanin patent cited by the Examiner as anticipating the instant invention, does not contain all of the material elements recited in Applicant's claim.

The invention, as recited in Claim 1, relates to an electronic operating device for operating one or more gas discharge lamps. The operating device includes an AC voltage generator which feeds an AC voltage into a load circuit which contains a least one lamp and is designed such that the phase of the current which flows in the load circuit is determined with reference to the applied AC voltage, essentially by at least one component which conducts a current which flows through the filaments, and a device for measuring the phase of the current, which flows in the load current, with reference to the applied AC voltage. The operating device is disconnected as soon as the above-named device for measuring the phase detects a phase angle which violates a prescribed limiting value.

In contrast thereto, Schanin relates to a reverse phase control power switching circuit and method for controlling the flow of current through a load from an AC source. The circuit includes a pair of inversely connected series switching devices which are controlled by a flip-flop to ensure that one switch is always in conducting mode and that one switch is always in blocking mode. With particular attention to column 1, lines 13-42,

Schanin discusses a conventional phase-controlled dimming circuit for an incandescent lamp. However, the incandescent dimming circuit does not include a means for measuring the phase of the load current. Moreover, there is no means for disconnecting the circuit as soon a phase angle is detected which violates a prescribed limiting value. In view of the above, Applicant respectfully submits that Schanin fails to disclose an electronic operating device as recited in independent Claim 1. Accordingly, the rejection is deemed improper since Schanin does not satisfy the essential requirement for a proper rejection under 35 U.S.C. § 102.

Claim 2 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Schanin in view of U.S. Patent No. 5,181,026 to Granville.

The Examiner states that Schanin does not disclose measuring time between the zero-crossing AC voltage supplied by the AC voltage generator and zero-crossing of the load circuit current. The Examiner is of the opinion that Granville discloses a power transmission monitoring circuit which includes measuring the time between the zero-crossing AC voltage supplied by the AC voltage generator and zero-crossing of the load circuit current (column 3, lines 41-50). The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention was made to include zero-crossing measurements as taught by Granville into Schanin for the purpose of calculating current phase angle (column 3, lines 59-68).

The above rejection is respectfully traversed and reconsideration thereof is requested. Applicant respectfully submits that there is no teaching, suggestion, or motivation for modifying the cited references in the manner proposed by the Examiner.

Granville relates to a power transmission line monitoring system. Applicant respectfully submits that nowhere does Granville mention that the power transmission line monitoring system includes a gas discharge lamp. With particular attention to FIG. 6, Granville teaches a quartz halogen incandescent lamp 99 within a ground receiving and data processing station 38. At column 3, lines 41-50, Granville discusses measuring the power line voltage sinusoidal waveform using the electric field phasor measured by an electrostatic field meter attached to the power line and is referenced to earth ground. Clearly, Granville fails to teach or suggest a device for measuring the phase of the current

which flows in a load which carries out a time measurement between the instant of the zero crossing of the AC voltage supplied by an AC voltage generator and the instant of the zero crossing of a load circuit current for use in an electronic operating device for a gas discharge lamp as defined by Claim 2.

Applicant respectfully adds that the Examiner's conclusion that it would have been obvious to include zero-crossing measurements as taught by Granville into Schanin for the purpose of calculating current phase angle is contrary to the teachings in Schanin. In fact, Schanin teaches away from such a combination. With particular attention to the Abstract and column 3, lines 40-43, Schanin is interested in providing a circuit that does not require the need for detecting zero-crossing. Accordingly, one of ordinary skill in the art at the time of the invention would not have been motivated to combine the teachings of Granville with Schanin in the manner proposed by the Examiner. The only way the Examiner could have arrived at his conclusion is through hindsight analysis by reading into the art the teachings of the Applicants. Hindsight analysis is clearly improper, since the statutory test is whether "the subject matter as a whole would have been obvious at the time the invention was made."

Claim 3 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Schanin in view of U.S. Patent No. 6,300,777 to Ribarich (Ribarich '777). The Examiner states that Schanin does not disclose a capacitor whose current flows through the filament. Ribarich '777 is cited by the Examiner as disclosing that it is well known to include a capacitor whose current flows through the filament (Fig. 1, element C) in a lamp circuit. The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention was made to include a capacitor as taught by Ribarich '777 into Schanin for the purpose of providing an indication of the voltage stored in the parallel lamp branch.

The above rejection is respectfully traversed and reconsideration thereof is requested. Applicant respectfully submits that there is no teaching, suggestion, or motivation for modifying the cited references in the manner proposed by the Examiner.

Applicant respectfully submits that under 35 U.S.C. §103, teachings of references can be combined only if there is some suggestion or incentive to do so. There is no

teaching, suggestion, or motivation for modifying the cited references by including the capacitor C, which is in parallel with the fluorescent lamp of Ribarich '777, with load 3 depicted in Figure 1 of Schanin.. Additionally, even if one were to assume, *arguendo*, that one of ordinary skill in the art would have been led to the combination proposed by the Examiner, one would still not arrive at the instant invention because the resulting combination would not meet all of the limitations recited in independent Claim 1 from which Claim 3 depends. For example, the proposed combination would not include a device for measuring the phase of the current which flows in the load circuit with reference to the AC voltage from an AC voltage generator which is fed into a load circuit. Also, the combination would not include means for disconnecting an operating device as soon as this specifically defined phase measuring device detects a particular phase angle between the current flowing in the load circuit and the applied AC voltage from an AC voltage generator.

Absent such teaching or suggestion, the invention as defined by Claim 3 is deemed fully patentable over the above references. Withdrawal of the rejection under 35 U.S.C. §103 and allowance of Claim 3 is respectfully urged.

Claim 4 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Schanin in view of U.S. Patent No. 5,925,990 to Crouse et al.

The Examiner states that Schanin does not disclose a disconnection logic circuit which contains at least one trigger and a timing element which supplies a signal which disconnects the operating device via the input of the AC voltage generator. Crouse et al is cited by the Examiner as disclosing an optocoupler for triggering disconnection of the operating device at the input of the AC voltage generator to filaments (column 7, lines 55-64). The Examiner concludes that it would have been obvious to one of ordinary skill in the art to include an optocoupler as taught by Crouse et al into Schanin for the purpose of improving efficiency of the electronic operating device (column 7, lines 60-63).

Applicant respectfully submits that Crouse et al relates to an electronic ballast that is controlled by a microprocessor. With particular attention to FIG. 10, Crouse et al teach the use of an opto-coupler in series with each filament. As disclosed in column 7, lines 58-62, the LEDs in the opto-couplers are coupled to the microprocessor for turning

on the filaments during start up and turning off the filaments during normal operation. In view of the above, Applicant respectfully submits that Crouse et al fails to teach or suggest the use of an opto-coupler whose output triggers disconnection of an operating device at the input of an AC voltage generator which feeds an AC voltage into a load circuit if input current of the optocoupler becomes negligibly small as defined by Claim 4. Allowance of Claim 4 is respectfully requested.

Claims 5 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Schanin and Crouse et al. as applied to Claim 4 above, and further in view of U.S. Patent No. 6,008,593 to Ribarich (Ribarich '593).

With respect to Claim 5, the Examiner states that Schanin does not disclose a disconnection logic circuit which contains at least one trigger and a timing element which supplies a signal which disconnects the operating device via the input of the AC voltage generator. Ribarich '593 is cited by the Examiner as disclosing a disconnection logic circuit which contains at least one trigger and a timing element which supplies a signal which disconnects the operating device via the input of the AC voltage generator (column 6, lines 20-26). The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a disconnection logic circuit as taught by Ribarich '593 into Schanin and Crouse et al for the purpose of providing automatic restarting of the electronic operating device (column 6, lines 21-23).

Ribarich '593 teaches a monolithic electronic ballast controller IC for driving two MOS gated power semiconductors connected in a totem pole or half-bridge arrangement. The controller provides programmable preheat time and current, programmable end-of-life protection, lamp fault protection and over-temperature protection. With reference to FIG. 3, Ribarich '593 discloses a phase control block 38 which subtracts the zero-crossing of the inductor current from a reference phase to produce an error pulse for regulation. The reference phase for phase control block 38 is set by a voltage produced by an internal current flowing through an external resistor at pin PLAMP which sets the lamp power. Unlike the present invention, Ribarich '593 fails to teach or suggest a device for measuring the phase of the current which flows in the load circuit with reference to the AC voltage from an AC voltage generator which is fed into a load circuit. According to the present

invention, the operating device is disconnected as soon as this specifically defined phase measuring device detects a particular phase angle between the current flowing in the load circuit and the applied AC voltage from an AC voltage generator. In view of the above, Applicant respectfully submits that Claim 4 is fully patentable.

With respect to Claim 6, the Examiner states that Schanin does not disclose an input to the disconnection circuit connected to the output of the optocoupler. Crouse et al is cited by the Examiner as disclosing input to the disconnection circuit/microcontroller connected to the output of the optocoupler (column 7, lines 58-60). The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a connection of the optocoupler to the disconnection circuit as taught by Crouse et al into Schanin for the purpose of identifying a condition of a gas discharge lamp (column 8, lines 5-10).

Applicant respectfully submits that there is no teaching or suggestion for the combination proposed by the Examiner. Moreover, Claim 6 is dependent on Claims 4 and 5 and thus depends on subject matter deemed patentable for the reasons set forth above with respect to these Claims. Allowance thereof is also urged.

The Application with Claims 1-6 is deemed in condition for allowance and such action is respectfully urged. Should the Examiner believe that minor differences exist which, if overcome, would pass the Application to allowance and that said differences can be discussed in a phone conversation, the Examiner is respectfully requested to phone the undersigned at the number provided below.

Respectfully submitted,



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